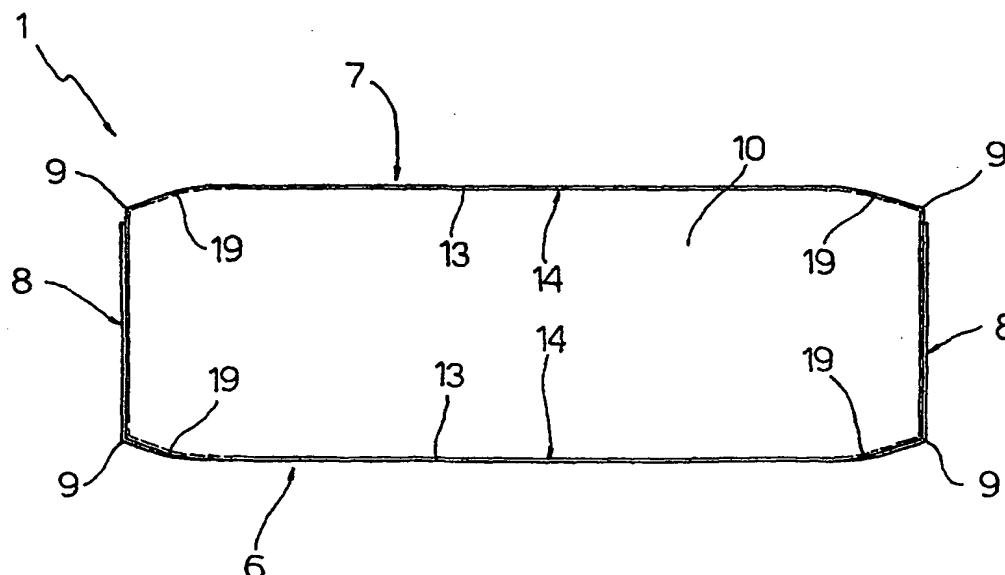


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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<b>(21) International Application Number:</b> PCT/IT99/00222 <b>(22) International Filing Date:</b> 16 July 1999 (16.07.99) <b>(30) Priority Data:</b> BO99A000029      21 January 1999 (21.01.99)      IT <b>(71) Applicant (for all designated States except US):</b> G.D. SOCI- ETA' PER AZIONI [IT/IT]; Via Pomponia, 10, I-40133 Bologna (IT). <b>(72) Inventor; and</b> <b>(75) Inventor/Applicant (for US only):</b> DRAGHETTI, Fiorenzo [IT/IT]; Via San Donino, 506, I-40059 Medicina (IT). <b>(74) Agents:</b> JORIO, Paolo et al.; Studio Torta S.r.l., Via Viotti, 9, I-10121 Torino (IT).		<b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>

**(54) Title:** RIGID HINGED-LID PACKET**(57) Abstract**

A rigid packet (1) with a hinged lid (5) for cigarettes (2) has a front wall (6) and a rear wall (7), each curving outwards and having a respective flat central portion (12) and two curved, preweakened lateral bands (17) connecting the relative flat central portion (12) to two flat lateral walls (8) of the packet (1) at respective sharp edges (9).

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## RIGID HINGED-LID PACKET

TECHNICAL FIELD

10       The present invention relates to a rigid hinged-lid packet.

More specifically, the present invention relates to a rigid hinged-lid packet made from a flat preweakened blank of cardboard or similar.

15       A particularly advantageous application of the present invention is in the manufacture of packets of cigarettes, to which specific reference is made in the following description purely by way of example.

BACKGROUND ART

20       Rigid hinged-lid packets of cigarettes are normally in the form of a rectangular-section parallelepipedon, and comprise a front and a rear wall connected to two lateral walls at respective sharp longitudinal edges.

25       Rigid packets of the above type, i.e. in the form of a rectangular-section parallelepipedon, have several drawbacks on account of their non-anatomical shape and their tendency to cause rapid wear of clothing fabrics

- 2 -

or similar with which they may come into contact.

A further drawback of rectangular-section parallelepiped packets lies in their relatively high rigidity in the regions of the relatively small side walls and adjacent right-angle corners as opposed to the relatively poor rigidity of the front and rear walls, which are easily deformed inwards when the external transparent wrapping is applied and made to shrink about the packet.

Owing to the above, the cigarettes inside the packet, instead of assuming a low-energy distribution inside the packet (the distribution having the lowest possible energy would be a distribution over a circle), are maintained in an extremely high energy distribution with the result that, when the packet is first opened, the extraction of the first cigarette from the front row of the packet is always rather difficult.

All the above drawbacks were at least in part overcome by bevelled edge and rounded edge packets of the types disclosed in EP-A-0204933 and EP-A-0205766 respectively. However, in general, these two types of packet need, for being manufactured with a relatively high precision, the use of special machines, such as those disclosed in EP-A-0205894 and EP-A-0200087, which are relatively slow in operation and are absolutely dedicated machines, i.e. cannot be used for manufacturing packets other than the above two types of

packet.

All the above renders the above two types of packet very expensive to manufacture.

Moreover, apart from being expensive, the rounded  
5 edge packets have the further drawbacks that, in general, their cover does not close in a precise manner on their box portion owing to the difficulty to make two rounded profiles to coincide with one another, and the external transparent wrapping does not suit the external  
10 shape of the packet at the rounded corners of its bottom and top surfaces with the result that, at these rounded corners, rigid outwardly protruding tips are formed which are not only anaesthetic, but also cause rapid wear of clothing fabrics or similar with which they may  
15 come into contact.

#### DISCLOSURE OF INVENTION

It is an object of the present invention to provide a rigid hinged-lid packet designed to eliminate the  
aforementioned drawbacks.

20 In particular, it is an object of the present invention to provide a rigid hinged-lid packet, which:

- allows the relevant cigarette group to deform to a relatively low-energy distribution, thus making the extraction of the first cigarette from the packet  
25 easier;
- avoids causing rapid wear of clothing fabrics or similar with which it may come into contact; and

- may be manufactured in an economic, easy and fast manner by using packing machines which, apart for very minor modifications, are those which are used for manufacturing rectangular-section parallelepiped packets.

According to the present invention, there is provided a rigid hinged-lid packet substantially in the form of a rectangular parallelepipedon and comprising a front wall and a rear wall substantially parallel to each other, and two lateral walls parallel to each other and substantially perpendicular to said front wall and said rear wall; said front wall and said rear wall each being connected to each of said two lateral walls at a respective sharp edge; characterized in that said front wall and said rear wall each comprise a respective flat central portion, and two lateral bands preweakened by longitudinal weakening lines; each lateral band being curved with the concavity facing inwards to connect the relative central portion to the lateral wall at the relative said sharp edge.

#### BRIEF DESCRIPTION OF THE DRAWINGS

A non-limiting embodiment of the invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a front view in perspective of a preferred embodiment of the packet according to the present invention in a closed configuration;

Figure 2 shows a view in perspective of the Figure 1 packet in an open configuration;

Figure 3 shows a rear view in perspective of the Figure 1 packet in the closed configuration;

5        Figures 4 and 5 show respective top and bottom plan views of the Figure 1 packet;

Figure 6 shows a flat blank from which to form the Figure 1 packet.

BEST MODE FOR CARRYING OUT THE INVENTION

10        Number 1 in Figures 1 to 5 indicates as a whole a packet housing a group of cigarettes 2 arranged in layers. In the example shown, the layers are three in number, the intermediate layer having one cigarette 2 less than the two outer layers.

15        Packet 1 comprises a cup-shaped bottom container 3 having an open top end 4; and a cup-shaped top lid 5 hinged to container 3 so as to rotate, with respect to container 3, between an open and a closed position respectively opening and closing end 4.

20        When lid 5 is closed, packet 1 is in the form of a substantially rectangular parallelepipedon defined by a front wall 6 and a rear wall 7 substantially parallel to each other and curving outwards; two lateral walls 8 parallel to each other, substantially perpendicular to  
25        walls 6 and 7, and connected to walls 6 and 7 at respective sharp edges 9; and a top wall 10 and a bottom wall 11 parallel to each other and perpendicular to

walls 6, 7 and 8.

Each of walls 6 and 7 comprises a flat, substantially rectangular, central portion 12, which is defined at the top by a straight central portion 13 of a major lateral edge 14 of top wall 10, and is defined at the bottom by a straight central portion 15 of a major lateral edge 16 of bottom wall 11. Each of walls 6 and 7 also comprises two longitudinal lateral bands 17 located on opposite sides of relative central portion 12 and between portion 12 and a relative edge 9. Each band 17 is preweakened internally by longitudinal weakening lines 18 so as to curve with the concavity facing inwards, and comprises a top edge extending along a curved lateral portion 19 of major lateral edge 14 of top wall 10, and a bottom edge extending along a curved lateral portion 20 of major lateral edge 16 of bottom wall 11.

As such, and as shown clearly in Figures 4 and 5, the distance between central portions 12 of walls 6 and 7 is greater than the distance between edges 9 of each of walls 8.

Each wall 6, 7, 8 comprises a top portion indicated by the letter "a" and defining a corresponding wall of lid 5, and a bottom portion indicated by the letter "b" and defining a corresponding wall of container 3; top wall 10 defines the bottom wall of lid 5; and bottom wall 11 defines the bottom wall of container 3.



Walls 6a, 7a, 8a have respective free edges 21, 22, 23 facing respective free edges 24, 25, 26 of walls 6b, 7b, 8b when lid 5 is closed; and the portion of edge 22 associated with relative portion 12a is integral with the portion of edge 25 associated with relative portion 12b to define a hinge 27 by which to rotate lid 5 between said open and closed positions.

Packet 1 comprises a U-shaped collar 28 projecting partially outwards of end 4 and in turn comprising a front wall 29, which is integral with the inner surface of wall 6 and is connected to two lateral walls 30, each of which is integral with the inner surface of, and of the same width as, a respective wall 8. Wall 29 has a flat central portion 31 connected to the inner surface of flat central portion 12 of wall 6; and two curved preweakened lateral bands 32, each extending in contact with the inner surface of a respective band 17 of wall 6, and each connecting portion 31 to a respective wall 30 along a sharp longitudinal edge 33.

Each band 32 has a respective number of inner longitudinal weakening lines, and a longitudinal slit 34 is formed along each edge 33 to define in known manner a respective brake tab 35 which cooperates with an inner surface of lid 5 to keep lid 5 in the closed position. Wall 29 also comprises a central cavity 36 formed in portion 31 and facing lid 5.

As shown in Figure 6, packet 1 is formed from a

flat blank 37 substantially in the form of an elongated rectangle, and the parts of which are indicated, wherever possible, using the same reference numbers, with superscripts, as for the corresponding parts of  
5 packet 1.

Blank 37 has a longitudinal axis of symmetry 38; and two preformed bend lines 39 and 40 on opposite sides of, and parallel to, axis 38 and which divide blank 37 into three side by side longitudinal strips 41, 42, 43  
10 crossed by a number of preformed bend lines perpendicular to axis 38 and indicated 44 to 49.

Lines 44 to 49 define, on central strip 42, a panel 6a' extending between lines 44 and 45; a panel 10' extending between lines 45 and 46; a panel 7a' extending  
15 between lines 46 and 47; a panel 7b' extending between lines 47 and 48; a panel 11' extending between lines 48 and 49 and substantially identical to panel 10'; and an end panel 6b' connected to panel 11'.

Panel 10' is connected to panels 6a' and 7a' along  
20 respective central portions 13 of edges 14, the lateral portions 19 of which are detached from panels 6a' and 7a'. Similarly, panel 11' is connected to panels 6b' and 7b' along respective central portions 15 of edges 16, the lateral portions 20 of which are detached from  
25 panels 6b' and 7b'.

Panels 6a', 7a', 7b', 6b' comprise respective flat central portions 50, 51, 52, 53, each of which defines

part of a respective central portion 12, and is substantially rectangular and of a width substantially equal to the length of central portions 13, 15 of edges 14, 16. Each of panels 6a', 7a', 7b', 6b' comprises two  
5 longitudinal lateral bands 54, 55, 56, 57, which are located on opposite sides of respective central portion 50, 51, 52, 52, and each of which comprises a respective portion adjacent to respective central portion 50, 51, 52, 53 and preweakened by longitudinal weakening lines,  
10 and a respective smooth outer portion extending along respective preformed bend line 39, 40.

Panel 6a' is connected along line 44 to a strengthening tongue 58 of substantially the same width as central portion 50.

15 Each of lines 39, 40 defines, outwards of panels 6a', 7a', 7b', 6b', respective substantially trapezoidal wings 59, 60, 61, 62; and each wing 60 has a substantially trapezoidal longitudinal appendix 63, which is joined to relative wing 60 along line 46, faces  
20 relative wing 59, and is of a maximum width equal to the width of each of lateral walls 8. Similarly, each wing 61 has a substantially trapezoidal longitudinal appendix 64, which is joined to relative wing 61 along line 48, faces relative wing 62, and is of a maximum width equal  
25 to the width of each of lateral walls 8.

Hinge 27 extends along line 47; wings 61 and 62 are folded squarely with respect to respective panels 7b'

- 10 -

and 6b'; by rotating panels 6b' and 7b' squarely towards each other and with respect to panel 11', wings 61 are superimposed on wings 62, so that lateral bands 56 and 57 assume a curved configuration with respect to  
5 respective central portions 52 and 53 to form walls 6b, 7b, 8b of container 3; and appendixes 64, once folded with respect to respective wings 61, and once rotated with wings 61 onto the inner surface of panel 11', define, with panel 11', the bottom wall 11 of packet 1.

10 Similarly, wings 59 and 60 are folded squarely with respect to respective panels 6a' and 7a'; by rotating tongue 58 onto the inner surface of panel 6a', and by rotating panels 6a' and 7a' squarely towards each other and with respect to panel 10', wings 59 are superimposed  
15 on wings 60 so that lateral bands 54 and 55 assume a curved configuration with respect to relative central portions 50 and 51 to form walls 6a, 7a, 8a of lid 5; and appendixes 63, once folded squarely with respect to relative wings 60, and once rotated with wings 60 onto  
20 the inner surface of panel 10', define, with panel 10', the top wall 10 of packet 1.

It should be pointed out that, upon completion of the above folding operation, lateral portions 19 of edges 14 of top wall 10 and lateral portions 20 of edges  
25 16 of bottom wall 11 are positioned facing, but detached from, relative lateral bands 17.

The above folding operation of blank 37 therefore

- 11 -

only provides for forming container 3 and lid 5, so that collar 28 must preferably be folded separately and then made integral with container 3.

## CLAIMS

1) A rigid hinged-lid packet substantially in the form of a rectangular parallelepipedon and comprising a front wall (6) and a rear wall (7) substantially parallel to each other, and two lateral walls (8) parallel to each other and substantially perpendicular to said front wall (6) and said rear wall (7); said front wall (6) and said rear wall (7) each being connected to each of said two lateral walls (8) at a respective sharp edge (9); characterized in that said front wall (6) and said rear wall (7) each comprise a respective flat central portion (12), and two lateral bands (17) preweakened by longitudinal weakening lines (18); each lateral band (17) being curved with the concavity facing inwards to connect the relative central portion (12) to the lateral wall (8) at the relative said sharp edge (9).

2) A packet as claimed in Claim 1, characterized in that the distance between said central portions (12) is greater than the distance between the sharp edges (9) of each said lateral wall (8).

3) A packet as claimed in Claim 1 or 2, characterized by comprising a first end wall (10) and a second end wall (11), each having two major lateral edges (14, 16); each said major lateral edge (14, 16) comprising respective curved lateral portions (19, 20)

of the same shape as each of said lateral bands (17) viewed in cross section; said lateral portions (19, 20) extending along, but being detached from, respective axial ends of the respective lateral bands (17).

5        4) A packet as claimed in any one of Claims 1 to 3, characterized by comprising a cup-shaped bottom container (3) having an open top end (4); a cup-shaped lid (5) hinged to said open top end (4) to rotate between an open position and a closed position  
10        respectively opening and closing said container (3); and a collar (28) connected to said container (3) and projecting partially from said open top end (4).

      5) A packet as claimed in Claim 4, characterized by being formed from a substantially rectangular, flat  
15        blank (37) of cardboard or similar.

      6) A packet as claimed in Claim 5, characterized in that said blank (37) has two preformed longitudinal bend lines (39, 40), and a number of preformed transverse bend lines (44-49) defining, between said two preformed  
20        longitudinal bend lines (39, 40) and for both the lid (5) and the container (3), a front panel (6a', 6b'), an intermediate panel (10', 11'), and a rear panel (7a', 7b'); each of said front panels (6a', 6b') and rear panels (7a', 7b') having a flat central portion (50, 53,  
25        51, 52), and two lateral portions (54, 57, 55, 56) preweakened by longitudinal weakening lines.

      7) A packet as claimed in Claim 6, characterized in

that each front panel (6a', 6b') has two opposite longitudinal lateral wings (59, 62), and each rear panel (7a', 7b') has two opposite longitudinal further lateral wings (60, 61); the further lateral wings (60, 61) of  
5 each rear panel (7a', 7b') having respective appendixes (63, 64) located on opposite sides of a relative intermediate panel (10', 11').

8) A packet as claimed in Claim 7, characterized in that each said appendix (63, 64) is of a maximum width  
10 equal to the minimum height of the relative said intermediate panel (10', 11'); each appendix (63, 64) being superimposed on the relative intermediate panel (10', 11') to define a portion of the relative said first end wall (10) and second end wall (11) of the  
15 packet (1).

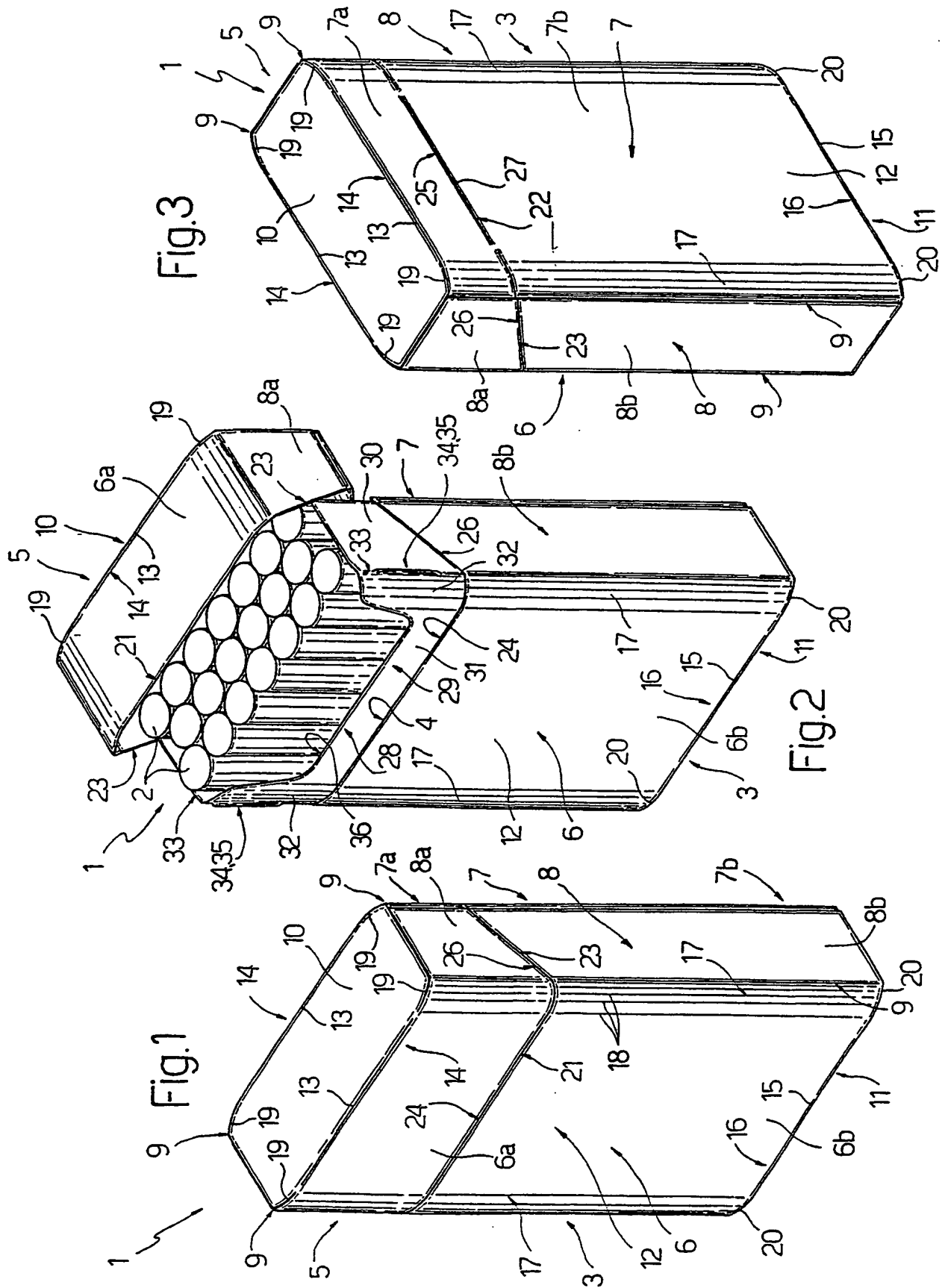
9) A packet as claimed in any one of Claims 6 to 8, characterized in that said blank (37) comprises a strengthening tongue (58) extending from said front panel (6a') and along the respective transverse bend  
20 line (44); said tongue (58) being of a width substantially equal to the width of the relative said central portion (50).

10) A packet as claimed in any one of Claims 4 to 9, characterized in that said collar (28) comprises a  
25 front wall (29) integral with said front wall (6) of the packet, and two further lateral walls (30) integral with respective said lateral walls (8) of the packet and

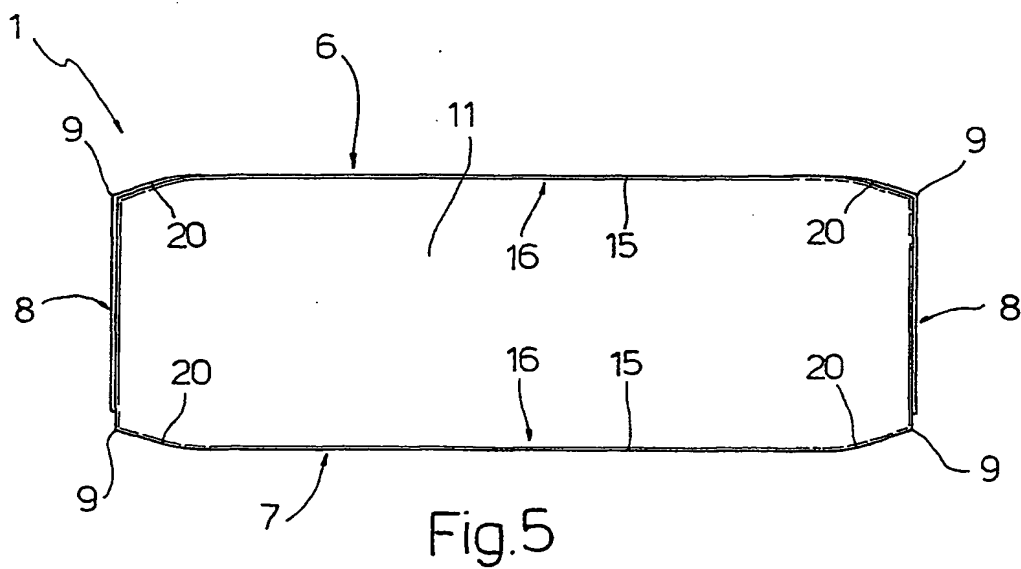
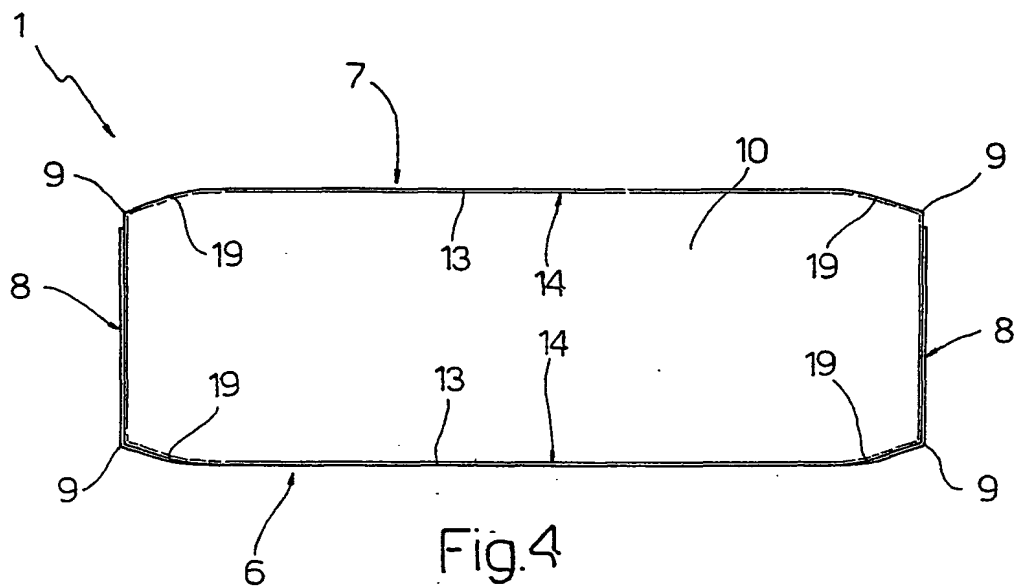


engaging the lid (5) when the lid (5) is in the closed position; said front wall (29) of the collar comprising a flat central portion (31), and two lateral portions (32) preweakened by longitudinal weakening lines and  
5 curved with the concavity facing said rear wall (7); each said lateral portion (32) of the collar (28) connecting said central portion (31) of the collar (28) to a relative said further lateral wall (30) at a respective further sharp edge (33); and the width of  
10 each further lateral wall (30) of the collar (28) being equal to the width of each said lateral wall (8) of the packet (1).

1 / 3



2 / 3



3 / 3

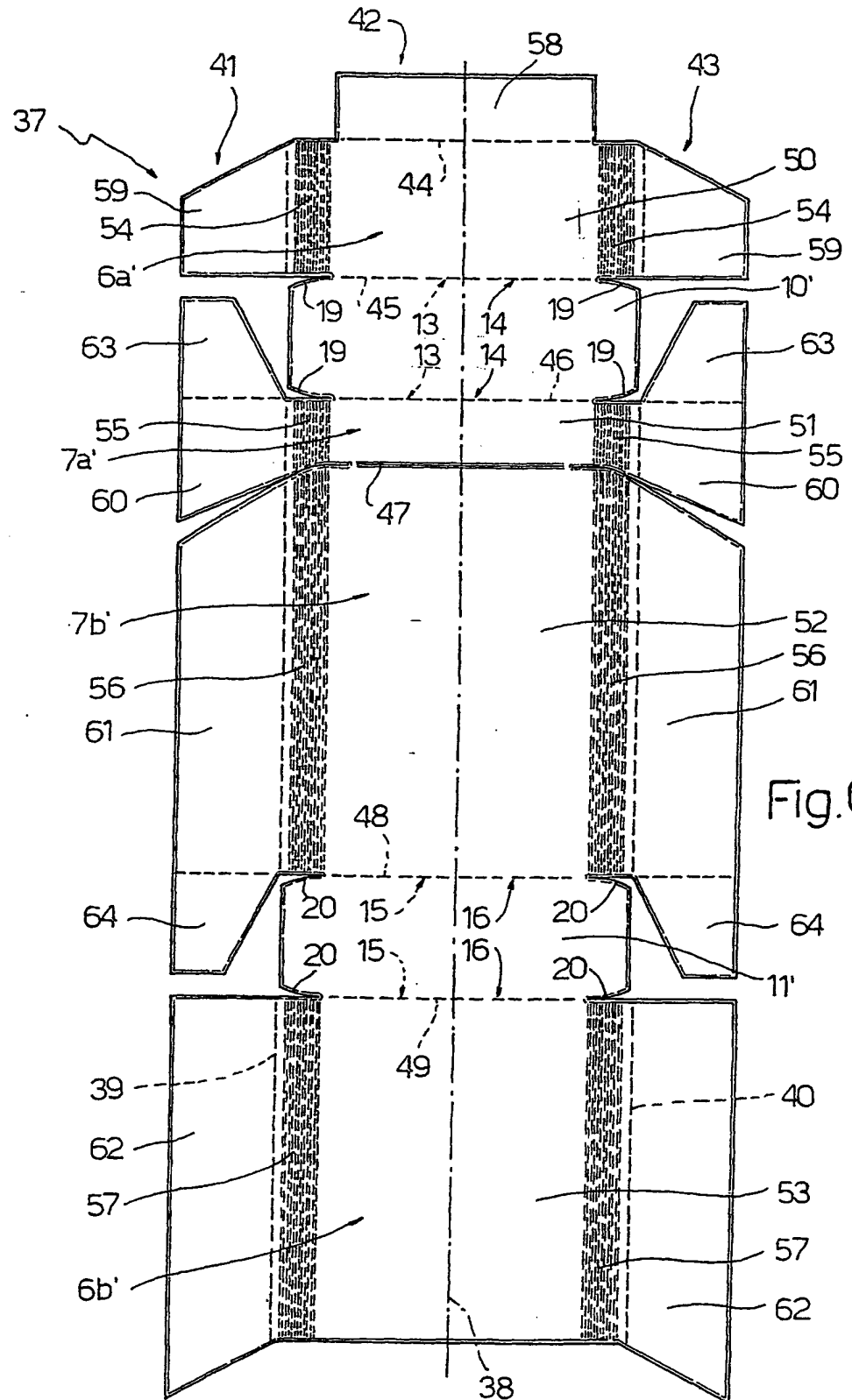


Fig. 6

# INTERNATIONAL SEARCH REPORT

International Application No

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## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B65D85/10

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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 36 15 828 A (REEMTSMA H F & PH) 12 November 1987 (1987-11-12)	1-6,9
Y	column 4, line 6 - line 48; claim 1; figure 1	7,8,10
X	DE 36 15 827 A (REEMTSMA H F & PH) 12 November 1987 (1987-11-12)	1-6,9
	column 4, line 23 -column 5, line 13; figures 1-6	
Y	US 5 806 671 A (FÖCKE HEINZ ET AL) 15 September 1998 (1998-09-15)	7,8,10
	column 2, line 46 -column 3, line 36; figures 1-10	
A	DE 197 18 821 A (FÖCKE & CO) 12 November 1998 (1998-11-12)	1
	figures 1-12	

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information on patent family members

International Application No

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 3615828	A	12-11-1987	NONE	
DE 3615827	A	12-11-1987	NONE	
US 5806671	A	15-09-1998	DE 19614043 A BR 9701761 A CN 1169836 A DE 59700235 D EP 0801010 A JP 10029677 A	16-10-1997 10-11-1998 14-01-1998 05-08-1999 15-10-1997 03-02-1998
DE 19718821	A	12-11-1998	AU 7649798 A WO 9850287 A	27-11-1998 12-11-1998

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